at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v7)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$$\sqrt{45} \qquad\qquad \sqrt{75} \qquad\qquad \sqrt{27}$$

$$\sqrt{3 \cdot 3 \cdot 5} \qquad\qquad \sqrt{5 \cdot 5 \cdot 3} \qquad\qquad \sqrt{3 \cdot 3 \cdot 3}$$
$$3\sqrt{5} \qquad\qquad 5\sqrt{3} \qquad\qquad 3\sqrt{3}$$

Question 2

Find all solutions to the equation below:

$$5(x - 10)^2 - 7 \;=\; 73$$

First, add 7 to both sides.
$$5(x - 10)^2 = 80$$

Then, divide both sides by 5.
$$(x - 10)^2 = 16$$

Undo the squaring. Remember the plus-minus symbol.

$$x - 10 = \pm 4$$

Add 10 to both sides.
$$x = 10 \pm 4$$

So the two solutions are $x = 14$ and $x = 6$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 - 8x \;=\; 84$$

Take the linear coefficient, -8, halve it and square the result. You should get 16. Add this to both sides of the equation to complete the square.

$$x^2 - 8x + 16 = 84 + 16$$
$$x^2 - 8x + 16 = 100$$

Factor the perfect-square trinomial.

$$(x - 4)^2 = 100$$
$$x - 4 = \pm 10$$
$$x = 4 \pm 10$$
$$x = 14 \qquad \text{or} \qquad x = -6$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y \;=\; 2x^2 - 24x + 77$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 2 .

$$y = 2(x^2 - 12x) + 77$$

We want a perfect square. Halve -12 and square the result to get 36 . Add and subtract that value inside the parentheses.

$$y = 2(x^2 - 12x + 36 - 36) + 77$$

Factor the perfect-square trinomial.

$$y = 2((x - 6)^2 - 36) + 77$$

Distribute the 2.

$$y = 2(x - 6)^2 - 72 + 77$$

Combine the constants to get **vertex form**:

$$y = 2(x - 6)^2 + 5$$

The vertex is at point $(6, 5)$.